CTEH®

THE SCIENCE OF READY℠

SOUTH 4 GROUP FIRE

Port Neches, TX

Preliminary Data Summary

Community

December 6, 2019

Project #112312

1.0 Introduction

On November 27, 2019 at approximately 04:00 Central Standard Time (CST), TPC Group requested that CTEH® provide air monitoring and analytical air sampling support in response to a tank fire at the TPC Group facility located in Port Neches, Texas. CTEH® arrived on-site on November 27, 2019 at 08:00 CST and began real-time air monitoring and analytical air sampling operations. This report summarizes real-time air monitoring data collected from December 5, 2019 06:00 CST to December 6, 2019 06:00 CST within the community.

2.0 Air Monitoring and Sampling Methods

CTEH® developed and implemented an Air Sampling Analysis Plan (SAP) to document and quantify the potential release of fugitive emissions from the incident at ground level. The SAP has been approved by local, state, and federal representatives of the on-site Unified Command (UC). In accordance with the SAP, sustained 1,3-butadiene detections of 0.5 ppm or greater and volatile organic compound (VOC) detections of 5.0 ppm or greater in the community are to be communicated to the Federal On-Scene Coordinator.

Real-time air monitoring was conducted for 1,3-butadiene, benzene, carbon monoxide (CO), fine-sized particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), styrene, volatile organic compounds (VOCs), and atmospheric flammability measured as the percentage of the lower explosive limit (%LEL). Real-time air monitoring was conducting using handheld instruments including Drager X-PID 8500, MultiRAEs, UltraRAEs, Gastec GV-100 handheld piston pumps (with colorimetric tubes), TSI SidePak™ AM510 and AM520 Aerosol Monitors. All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Target analytes were measured as listed in **Table 1** below. Roaming air monitoring was performed in community areas with handheld instruments. All handheld air monitoring was conducted in the breathing zone.

In addition, CTEH® also collected air samples for analysis of airborne VOCs, polynuclear aromatic hydrocarbons (PAHs) and asbestos in the surrounding community at the time of this report. These samples are sent to a 3rd-party accredited laboratory for subsequent chemical analysis. Air sampling data will be summarized in separate reports.

3.0 Air Monitoring Results

Attachment A provides maps of the locations of handheld air monitoring and analytical air sampling in community residential areas, as well as a map of zones within the community. A cumulative summary of the community handheld air monitoring results is presented in **Table 1. Table 2** and **Table 3** include a subset of the cumulative data provided in Table 1 and summarize the results of handheld air monitoring conducted in Zones 1 and 8, respectively.

Table 1: Community Handheld Real-Time Air Monitoring Results (All Zones)

Analyte	Instrument	# of Readings	# of Detections	Range*
1,3-Butadiene	Drager X-PID 8500	316	32	0.08 - 5.21 ppm
	Gastec #174LL	2	2	0.2 - 0.2 ppm
	UltraRAE	1343	10	0.03 - 1.60 ppm
Benzene	Drager X-PID 8500	215	0	< 0.02 ppm
Carbon Monoxide (CO)	MultiRAE	57	0	< 1 ppm
%LEL	MultiRAE	1006	0	< 1 %
Nitrogen Dioxide (NO_2)	MultiRAE	32	0	< 0.1 ppm
Particulate Matter ($PM_{2.5}$)	AM510	169	169	0.006 - 0.070 mg/m^3
	AM520	90	90	0.014 - 0.121 mg/m^3
Styrene	Gastec #124L	27	0	< 0.5 ppm
VOCs†	MultiRAE	1638	16	0.1 - 2.6 ppm

*If no detection was observed, the instrument detection limit preceded by a "<" symbol is listed. These data have not undergone QAQC and should be considered preliminary at this time. †Volatile organic compounds.

Table 2: Zone 1 Community Handheld Real-Time Air Monitoring Results‡

Analyte	Instrument	# of Readings	# of Detections	Range*
1,3-Butadiene	Drager X-PID 8500	127	18	0.09 - 5.21 ppm
	UltraRAE	306	5	0.03 - 1.60 ppm
Benzene	Drager X-PID 8500	81	0	< 0.02 ppm
Carbon Monoxide (CO)	MultiRAE	23	0	< 1 ppm
%LEL	MultiRAE	228	0	< 1 %
Particulate Matter ($PM_{2.5}$)	AM510	53	53	0.006 - 0.054 mg/m^3
	AM520	13	13	0.029 - 0.114 mg/m^3
Styrene	Gastec #124L	16	0	< 0.5 ppm
VOCs†	MultiRAE	409	6	0.1 - 2.5 ppm

*If no detection was observed, the instrument detection limit preceded by a "<" symbol is listed. These data have not undergone QAQC and should be considered preliminary at this time. †Volatile organic compounds. ‡These results are a subset of the results provided in Table 1.

Table 3: Zone 8 Community Handheld Real-Time Air Monitoring Results‡

Analyte	Instrument	# of Readings	# of Detections	Range*
1,3-Butadiene	Drager X-PID 8500	142	14	0.08 - 0.78 ppm
	Gastec #174LL	2	2	0.2 ppm
	UltraRAE	235	2	0.32 - 0.7 ppm
Benzene	Drager X-PID 8500	119	0	< 0.02 ppm
Carbon Monoxide (CO)	MultiRAE	18	0	< 1 ppm
%LEL	MultiRAE	238	0	< 1 %
Particulate Matter ($PM_{2.5}$)	AM510	77	77	0.011 - 0.070 mg/m^3
	AM520	58	58	0.014 - 0.104 mg/m^3
Styrene	Gastec #124L	5	0	< 0.5 ppm
VOCs†	MultiRAE	375	5	0.1 – 0.2 pm

*If no detection was observed, the instrument detection limit preceded by a "<" symbol is listed. These data have not undergone QAQC and should be considered preliminary at this time. †Volatile organic compounds. ‡These results are a subset of the results provided in Table 1.

During this reporting period, 19 out of 1,671 readings of 1,3-butadiene were at or above the action level of 0.5 ppm at airborne concentrations ranging from 0.51 – 5.21 ppm. These action level exceedances were reported to UC in accordance to the protocol outlined in the UC approved SAP. Out of the 19 action level exceedances for 1,3-butadiene, 15 were within Zone 1 and 3 were within Zone 8. All other readings for 1,3-butadiene reported during this air monitoring period were below the respective UC-approved action level of 0.5 ppm. No detections of benzene, CO, %LEL, styrene, or NO_2 were observed in the community during this reporting period. VOCs were detected infrequently, and all detections of VOCs were reported below the action level for VOCs approved by UC. The average of the detections for all $PM_{2.5}$ readings collected during this reporting period was 0.033 mg/m^3.

4.0 Weather Conditions

Attachment B contains a wind rose depicting wind speed and direction for this reporting period. Data were acquired from the Nederland High School (C1035) meteorological station located on 2108 N 18th St approximately 4 miles west of the incident site.

Attachment A

CTEH Community Air Monitoring Locations

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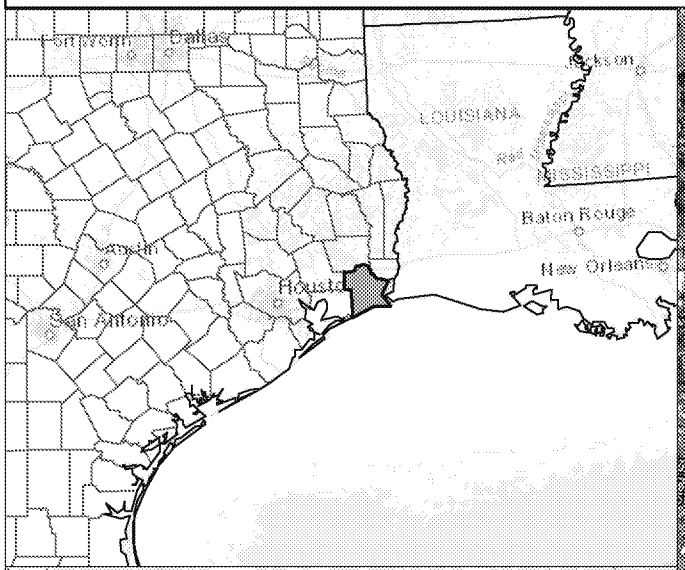
Site Location

South 4 Group Fire | Port Neches, TX

Project: 112312
Client: TPC Group
City: Port Neches, TX
County: Jefferson



Projection System: *Transverse Mercator* Datum: *NAD 1983 2011*

Document Name: 112312_site_location Last Updated: *11/30/2019 4:49:44 PM*

ED_004207_00000283-00007

ED_004207_00000283-00008

Handheld Real-Time Community Monitoring Locations

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:10:35 AM*

ED_004207_00000283-00009

Handheld Real-Time Community Monitoring Locations (Benzene)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:29:16 AM*

ED_004207_00000283-00010

Handheld Real-Time Community Monitoring Locations (1,3-Butadiene Detections)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983*

LAST UPDATED: *12/6/2019 7:32:22 AM*

ED_004207_00000283-00011

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Handheld Real-Time Community Monitoring Locations (1,3-Butadiene Non Detects)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:34:19 AM*

ED_004207_00000283-00012

Handheld Real-Time Community Monitoring Locations (Carbon Monoxide)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:36:42 AM*

ED_004207_00000283-00013

Handheld Real-Time Community Monitoring Locations (%LEL)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:47:23 AM*

ED_004207_00000283-00014

Handheld Real-Time Community Monitoring Locations (NO2)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:50:31 AM*

ED_004207_00000283-00015

Handheld Real-Time Community Monitoring Locations (PM2.5)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 7:56:34 AM*

ED_004207_00000283-00016

Handheld Real-Time Community Monitoring Locations (VOCs)

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* **DATUM:** *North American 1983* **LAST UPDATED:** *12/6/2019 11:57:59 AM*

ED_004207_00000283-00017

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Analytical Sampling Locations

South 4 Group Fire | Port Neches, TX | 12/5/2019 06:00 - 12/6/2019 06:00 CST

Project:112312
Client: TPC
City: Port Neches, TX
County: Jefferson

COORDINATE SYSTEM: *NAD 1983 UTM Zone 15N* DATUM: *North American 1983*

LAST UPDATED: *12/6/2019 11:51:43 AM*

Attachment B

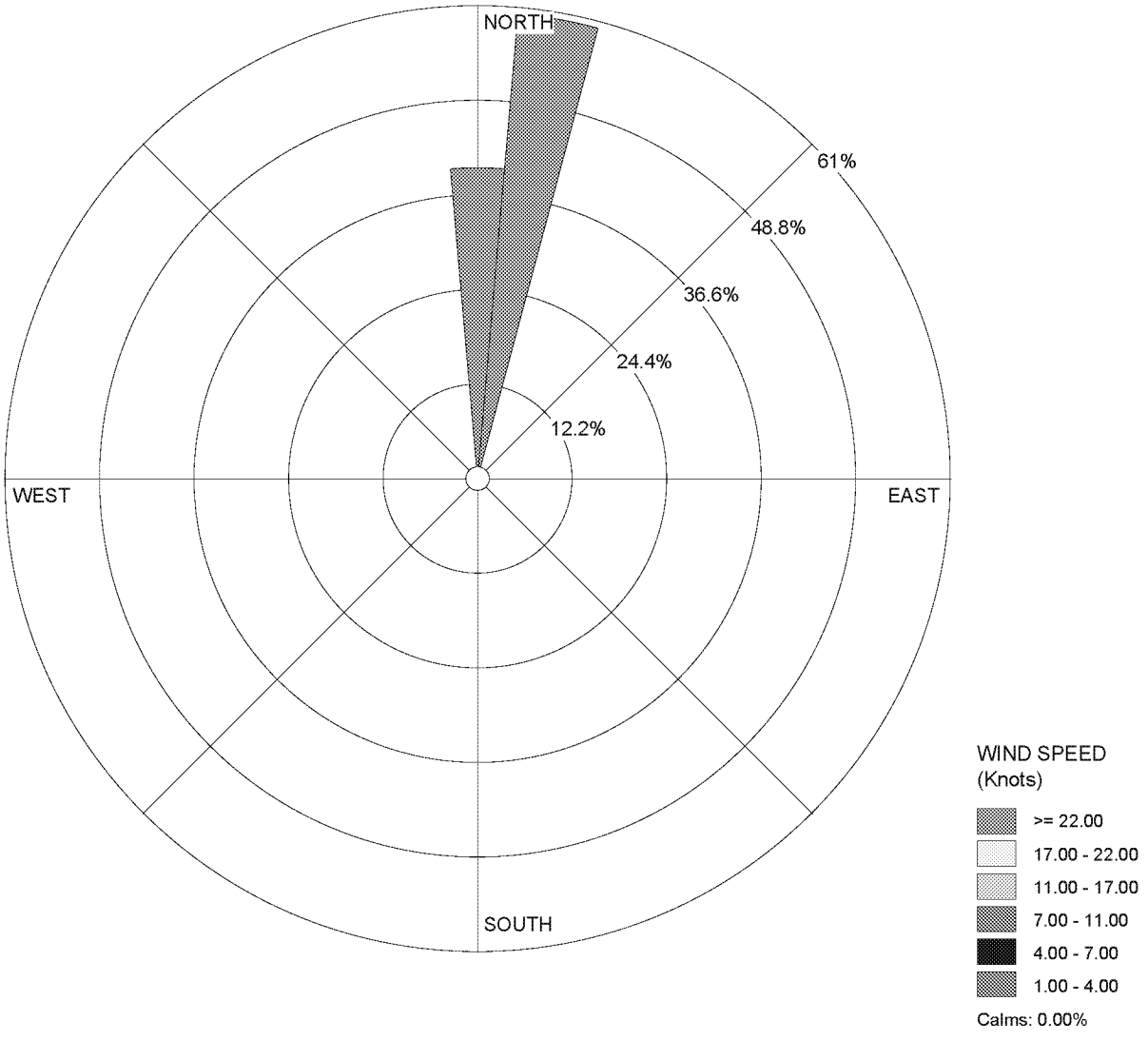
Meteorological Conditions

WIND ROSE PLOT:

South 4 Group Fire
Dec 5, 2019 06:00 to Dec 6, 2019 06:00

DISPLAY:

Wind Speed Direction
(blowing from center point)



COMMENTS:		COMPANY NAME:	
		CTEH, LLC	
		MODELER: **Chance Gilliam**	
	CALM WINDS: **0.00%**	TOTAL COUNT: **25 hrs.**	
	AVG. WIND SPEED: **134.30 Knots**	DATE: **12/6/2019**	PROJECT NO.: **112312**

WRPLOT View - Lakes Environmental Software